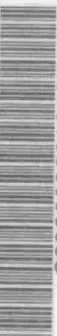


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WATER POLLUTION SURVEY

of the

TOWN OF HAWKESBURY

COUNTY OF PRESCOTT

1966

TOWN OF HAWKESBURY - 1966  
(COUNTY OF PRESCOTT)

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Report on a water pollution  
survey of the town of  
Hawkesbury in the county of  
Prescott.

80352

THE  
ONTARIO WATER RESOURCES  
COMMISSION

Report on a  
WATER POLLUTION SURVEY

of the  
TOWN OF HAWKESBURY

in the  
COUNTY OF PRESCOTT

Division of Sanitary Engineering

1 9 6 6

Report on a  
WATER POLLUTION SURVEY  
of the  
TOWN OF HAWKESBURY

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## WATER POLLUTION SURVEY

of the

### TOWN OF HAWKESBURY

#### INTRODUCTION

Various surveys and studies have been carried out of the Ottawa River at Hawkesbury in relation to water pollution and pollution abatement. On November 3, 1965, further sampling was effected of the Ottawa River, West Hawkesbury Creek, and any evident discharge to these watercourses.

The purpose of this report is to attempt to provide an overall water pollution picture within the Town of Hawkesbury by compiling the information obtained during these surveys.

Sample results are tabulated in appendix No. 1 of this report. The second appendix is an interpretation of the laboratory results. A map of the town of Hawkesbury showing sampling point locations is also appended.

Assistance provided by the following officials on November 3, 1965, is gratefully acknowledged.

Mr. K. B. Cuillerier, Clerk-Treasurer, Town of Hawkesbury;  
Mr. C. E. Seguin, Town Engineer, Town of Hawkesbury;  
Mr. H. Villeneuve, Hawkesbury Works Department.

## TOWN OF HAWKESBURY

Hawkesbury is located on the south shore of the Ottawa River approximately 12 miles west of the Quebec-Ontario boundary. According to the 1965 Municipal Directory its assessed population is 9,014.

Hawkesbury draws its water from the Ottawa River. No facilities for the treatment of sewage are provided and consequently raw sanitary wastes are discharged to the Ottawa River. Although there are various industries in the municipality, the principal industry, Canadian International Paper Company Limited is the only firm which directly affects the waters of the Ottawa River by its industrial waste discharge.

## SURFACE WATERS

### Ottawa River

The Ottawa River pursues an easterly course past Hawkesbury. This river drains an area of approximately 56,000 square miles in Ontario and Quebec and forms a boundary between these two provinces for a distance of approximately 360 miles from the head of Lake Timiskaming to the Carillon Rapids near Point Fortune.

At Hawkesbury, the Perly Bridge spans the River between Ontario and Quebec. Due to the existence of a number of islands in the river at this point, the water flows through various secondary channels as well as the main channel.

In 1962, the Carillon Dam was constructed by the Hydro-Electric Power Commission several miles downstream from the town. Due to this development, the water levels in the Ottawa River were increased approximately 20 feet. This caused considerable flooding of the shoreline in the vicinity of Hawkesbury, and eliminated a number of the channels which formerly existed.

The following flow data for the period of 1930 to 1960 obtained from the Federal Department of Northern Affairs and National Resources, Water Resources Branch, is noted.

Mean daily discharge	-	68,600 cfs
Maximum daily discharge April 17, 1951	-	326,000 cfs
Minimum daily discharge March 5, 1934	-	24,000 cfs

#### West Hawkesbury Creek

West Hawkesbury Creek rises in the Township of Caledonia some eleven miles south of Hawkesbury and flows to its mouth at the Ottawa River within the town. A small tributary flows from the west and joins this creek at Bonpasteur Street.

#### WATER SUPPLY

The municipal water works was constructed in 1953 and utilizes the Ottawa River as a source of supply. The plant intake works are owned and operated by the Canadian International Paper Company. In addition to filtration, provision is made for chemical treatment with alum, activated silica, lime, chlorine and fluoride. The present capacity of this plant is 2.0 U.S. million gallons per day.

## SEWERAGE FACILITIES

Surface waters are carried to the Ottawa River and to West Hawkesbury Creek by municipal storm sewers and drainage courses. In some instances, combined flows are discharged.

Due to the raising of the levels of the Ottawa River by the construction of the Carillon Dam, the sewerage system for the Town of Hawkesbury was affected by flooding. Therefore, the Hydro-Electric Power Commission constructed new storm water and sanitary sewage facilities during 1961 and 1962. A combined trunk sewer was constructed along Main Street extending from West Street to Cameron Street. A pumping station to receive the combined storm water and sanitary sewage was also constructed. The pumping station discharges its flows to the Ottawa River.

Samples collected on November 3 revealed high coliform, and/or BOD and suspended solids counts in the following municipal sewer discharges; the outfall to the Ottawa River at the foot of Cameron Street, the sewage pumping station outfall, and the outfall to West Hawkesbury Creek south of Mill Entrance Street.

## Industrial Wastes

Process wastes from the Hawkesbury mill of the Canadian International Paper Limited are discharged to a 32-acre impoundment adjacent to the plant. This area which has been referred to as the lower lagoon is located at the east end of the mill property and opposite McGill Street (Hwy. 34). This lagoon serves as a settling

basin, and the overflow discharges through a submerged outfall to the Ottawa River.

Solids which settle in the lagoon are dredged and pumped to an impoundment called the upper lagoon. The overflow from the upper lagoon is discharged to a small stream which in turn discharges to the Ottawa River just downstream from the water intake for the mill and the Town of Hawkesbury. The appended sample results reveal the strength of the wastes in both discharges to be excessive.

Officials of the Canadian International Paper Limited have co-operated with the Commission in an endeavour to provide adequate industrial waste disposal. Originally, the wastes from the lower lagoon were discharged to the Ottawa River in a channel between Cobbs Island and Hamilton Island. Due to the flow pattern at this point much of the waste was floating back toward the main shore of the river and through the small channels approaching the Perley Bridge. It had been observed that the mill wastes contain a considerable amount of food for micro-organisms, e.g., dissolved wood sugars, and therefore, when these wastes mix with the municipal sanitary sewage containing an abundance of organisms, an environment is provided which is conducive to the prolific growth of bacteria with the subsequent development of objectionable conditions. The results of the samples collected near the sanitary waste outfall (sample point number 0 67.63) which indicate very high coliform counts and the presence of phenols and lignins support this observation.

During the latter part of 1964, and the first part of 1965, the lagoon outfall was extended for approximately 500 feet into the channel between Hamilton Island and Cobbs Island. In addition, the old mill pond control structure between Hamilton Island and John Street was removed. A Department of Transport wharf has since been constructed at this site. Subsequent flow studies have revealed that the main portion of the waste from the paper company is now carried out the channel west of John Street into the main stream of the Ottawa River. It was reported on November 3 that deposits of these wastes were being noticed along the Government wharf.

#### MUNICIPAL ACTION ON WATER POLLUTION

Realizing its obligation for the protection of water quality the municipality has obtained a consulting engineers report on sewage disposal. The report has recommended construction of a water pollution control plant as well as possible extension of the present outfall sewer. Negotiations are presently underway in an effort to carry out these recommendations.

#### SUMMARY

Considerable effort has been made by the Town of Hawkesbury and the Canadian International Paper Company to alleviate pollution of the Ottawa River which has been attributed mainly to the discharge of raw sewage and industrial wastes from these two sources. The Canadian International Paper Company has extended its lagoon outfall in an effort to channel wastes into the main stream of the Ottawa

River. The Town of Hawkesbury is presently considering its consulting engineer's report which recommended the construction of a water pollution control plant and possible extension of the outfall sewer. When sewage treatment facilities have been established, the town could then proceed with the elimination of certain contaminated storm sewer discharges which presently flow to the Ottawa River and Hawkesbury Creek.

#### RECOMMENDATIONS

1. The Town of Hawkesbury should continue in its efforts to provide satisfactory treatment and disposal of its sanitary sewage.
2. When the above facilities have been provided, efforts should be made to eliminate contaminated storm sewer discharges.
3. The Canadian International Paper Company Limited should continue its efforts to provide an industrial waste disposal method which will not impair the quality of the waters of the Ottawa River.

Approved by: L. G. South  
L. G. South,  
Acting District Engineer,  
Division of Sanitary Engineering.

Prepared by: M. M. Holy

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## APPENDIX I

### INTERPRETATION OF ANALYSES

The analyses employed to assess the quality of the surface waters are as follows:

#### Biochemical Oxygen Demand (BOD)

The BOD of sewage, polluted water, or industrial wastes is the oxygen required for the stabilization of decomposable organic matter or chemical material by aerobic bio-chemical action. Unless otherwise noted, a 5-day BOD determination with incubation at 20° Centigrade is reported. A high BOD is indicative of organic or chemical pollution. A desirable upper limit in natural water is commonly four (4) parts per million.

#### Solids

The analyses for solids include tests for total, suspended, and dissolved solids. The first test measures both the solids in solution and in suspension. The results are reported in parts per million.

The suspended solids indicate the measure of undissolved solids of organic or inorganic nature in suspension. Land erosion, sewage, and industrial wastes are significant sources of suspended solids. The effect of suspended solids in water is reflected in difficulties associated with water purification and deposition in streams which could interfere with navigation and injure the habitat of fish.

The dissolved solids are a measure of those solids in solution.

### Membrane Filter Coliform Count

The membrane filter technique is employed to obtain a direct enumeration of coliform organisms and is reported per 100 millilitres. The presence of coliforms indicates pollution from human or animal excrement or from some non-faecal forms. A membrane filter coliform count in excess of the desirable upper limits of 2,400 organisms is considered to render the waters undesirable for bathing purposes.

### Phenols

The phenolic components collectively referred to as phenols, are those hydroxy derivatives of benzene or its condensed nuclei which are determined by the Gibbs Method with modifications. The results are reported in parts per billion (ppb).

Phenols are present in waste flows from many industrial processes. Dependent on the concentration, the presence of this material may be toxic to fish or may taint the flesh of fish. Phenols in very minute concentrations will combine with chlorine to produce intense tastes and odours which are variously described as medicinal, chemical, or iodoform.

As an objective, the concentration of phenol should not exceed 5 parts per billion at any point in receiving waters subsequent to initial dilution.

Lignin

Lignin is a plant constituent which is often discharged as a waste during the manufacture of paper pulp. This matter is determined by a colourimetric method and is reported in parts per million as tannic acid.

This test is employed as an indication of the presence of paper mill wastes.

TOWN OF HAWKESBURY

SAMPLES PERTAINING TO OTTAWA RIVER

<u>Sample Point No.</u>	<u>Description</u>	<u>Date</u>	<u>Coliforms per 100 ml</u>	<u>5-Day BOD</u>	<u>S O L I D S</u>			<u>Phenols in ppb</u>	<u>Lignins as tan- nic acid</u>
					<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>		
O 66.9	Ottawa River down- stream limits of Hawkesbury								
(1)	shore sample	Nov. 3/65	220	0.8	110	12	98		
(2)	200 ft. offshore	July 15/65	35,000	3.8	108	12	96	20	10
(3)	500 ft. offshore	July 15/65	27,000	3.5	116	12	104	15	15
(4)	900 ft. offshore	July 15/65	62,000	3.3	110	10	100	10	6
(5)	1500 ft. offshore	July 15/65	14,000	2.8	98	8	90	40	15
O 67.05 W	Storm sewer outfall to Ottawa R. at foot of Chamberlain Street	Nov. 3/65	7,200	0.2	248	3	245		
O 67.2 W	Storm sewer outfall to Ottawa R. at foot of Dufferin St.	Nov. 3/65	390,000	3.2	115	9	106		
O 67.45 W	Sewer outfall to Ottawa R. at foot of Cameron Street	Nov. 3/65	350,000	17	184	26	158		
O 67.63	Ottawa River just downstream from sewage pumping station								
(1)	shore sample	Nov. 3/65	840	0.4	108	15	93		
(2)	200 ft. offshore	May 7/64	120,000	30.0	180	16	164	120	25
		July 15/65	25,000	3.6	130	7	123	30	6

SAMPLES PERTAINING TO OTTAWA RIVER - cont'd

Sample Point No.	Description	Date	Coliforms per 100 ml.	5-Day BOD	<u>S O L I D S</u>			Phenols in ppb	Lignin as tan- nic acid
					Total	Susp.	Diss.		
O 67.63 (3) cont'd	400 ft. offshore	May 7/64	115,000	18.0	178	27	151	100	20
		July 15/65	144,000	2.7	102	1	101	15	3
	(4) 600 ft. offshore	May 7/64	3,500	4.0	96	12	84	35	5.0
		July 15/65	100,000	2.1	88	9	79	10	2
	(5) 800 ft. offshore	May 7/64	200	0.9	78	10	68	10	1.0
		July 15/65	12,800	0.9	86	9	77	15	2
	(6) 1100 ft. offshore	May 7/64	40	0.8	94	9	85	7	1.0
		July 15/65	19,000	7.8	150	12	138	60	7
O 67.65 W	Storm sewer outfall to Ottawa R. just east of sewage pumping station	Nov. 3/65	100	1.4	148	39	109		
O 67.67 S	Outfall from sewage pumping station to Ottawa River	Nov. 3/65	4,100,000	84	394	67	327		
O 67.8 W	Storm sewer outfall to Ottawa R. at rear of sewage pumping station	Nov. 3/65		N O	F L O W				
O 68.0	Ottawa R. at Perly Bridge	July 24/63	14,000	0.6	100	--	--	12	
		July 15/65	1,300	0.8	74	12	62	10	2
		Nov. 3/65	420	1.0	92	24	68		
O 68.0 (2)	Ottawa R. at Govern-ment wharf - formerly old damsite	May 7/64		0.9	86	10	76	5	0.5
		Nov. 3/65	300	1.3	86	12	74		

SAMPLES PERTAINING TO OTTAWA RIVER - Cont'd

Sample Point No.	Description	Date	Coliforms per 100 ml.	5-Day BOD	<u>S O L I D S</u>			Phenols in ppb	Lignin as tan- nic acid
					Total	Susp.	Diss.		
0 68.0 (3) cont'd	Second or northern approach to Perly Bridge	July 24/63	122,000	24	180			60	
		July 15/65	1,600	3.0	74	11	63	6	2
(4)	First or southern approach to Perly Bridge	July 24/63	70,000	8.0	158			60	
		May 7/64	100,000	4.6	1452	272	1180	25	25
		July 15/65	920	2.1	128	14	114	15	5
		Nov. 3/65	290	0.8	102	18	84		
0 68.4 I	C.I.P. industrial waste outfall - lower lagoon	Aug. 13/64 (composite		1000					1500
		July 15/65 sample)		1040	3046	126	2920	0	500
		Nov. 3/65	0	1040	3158	128	3030		700
0 69.0 I	C.I.P. industrial waste outfall - upper lagoon	Aug. 13/64 (composite sample)		1050					1800
0 69.1	Ottawa River just upstream from water works	Nov. 3/65	2,200	0.6	116	18	98		

TOWN OF HAWKESBURY

SAMPLES PERTAINING TO WEST HAWKESBURY CREEK

<u>Sample Point No.</u>	<u>Description</u>	<u>Date</u>	<u>Coliforms per 100 ml.</u>	<u>5-Day BOD</u>	<u>S O L I D S</u>		
					<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>
O-WH 0.35	West Hawkesbury Creek at Main Street East	Nov. 3/65	1,070	0.2	288	13	275
O-WH 0.39-W	Storm sewer outfall to West Hawkesbury Creek just south of Main St.	Nov. 3/65		N O	F L O W		
O-WH 0.85-D	Ditch draining to West Hawkesbury Creek at Bon Pasteur Street	Nov. 3/65	3,500	1.2	278	53	225
O-WH 1.23-W	Storm sewer outfall to west bank of West Hawkesbury Creek south of Mill Entrance St.	Nov. 3/65	130,000	1.2	302	10	292
O-WH 1.72-W	Storm sewer outfall to west bank of West Hawkesbury Creek near the south limit of Hawkesbury	Nov. 3/65	200	1.6	1066	191	875
O-WH 2.4	West Hawkesbury Creek upstream from Hawkesbury	Nov. 3/65	340	0.4	278	9	269